

2.4.2 Land Conveyance and Transfer

A portion of the proposed alignment of the 12-in. (30-cm) gas pipeline is located within the White Rock Y Tract identified in the ROD for the *Conveyance and Transfer of Certain Lands Administered by the DOE and Located at Los Alamos National Laboratory, Los Alamos and Santa Fe Counties, New Mexico* (DOE 1999b). To be conveyed or transferred, these tracts must not be necessary for required DOE mission-related use and must have undergone any necessary environmental restoration or remediation activities. If transferred, it is anticipated that these lands would be used for natural areas or used for transportation and utility improvements by Los Alamos County. However, DOE determined that part of the White Rock Y Tract considered for the proposed easement to PNM should be retained by the DOE. This part of the White Rock Y Tract would serve as a health and safety buffer area for the proposed Advanced Hydrotest Facility (AHF) if NNSA decides to build the facility at LANL's TA-53. Should this conveyance decision change, any utility easements would be transferred with the land. The proposed gas pipeline would be buried from 4 ft to 8 ft (1.2 m to 2.4 m) deep and would not be expected to affect or be affected by the AHF project if it were constructed at LANL.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3.0 describes the natural and human environment that could be affected by the Proposed Action and the No Action Alternative and the potential environmental consequences of those actions. Based on the Proposed Action description, environmental resources that may potentially be affected as a result of implementing the Proposed Action have been considered. Environmental issues were identified and either addressed in this section or not, based on the "Sliding Scale Approach" discussed earlier in this EA (Section 1.4). Table 2 identifies the subsection where potential environmental issues are discussed in this document. Table 3 identifies the environmental issues that were dismissed from further consideration.

Table 2. Potential Environmental Issues

Environmental Category	Applicability	Subsection
Land Use	Yes	3.2.1
Geologic Setting	Yes	3.2.2
Water Resources	Yes	3.2.3
Floodplains/Wetlands	Yes	3.2.4
Biological Resources	Yes	3.2.5
Air Quality	Yes	3.2.6
Visual Resources	Yes	3.2.7
Cultural Resources	Yes	3.2.8
Utilities and Infrastructure	Yes	3.2.9
Noise	Yes	3.2.10
Human Health	Yes	3.2.11
Waste Management/Environmental Restoration	Yes	3.2.12
Transportation and Traffic	Yes	3.2.13

3.1 Regional Setting

The Proposed Action would be located within the areas of Los Alamos and Santa Fe Counties that include LANL. LANL comprises a large portion of Los Alamos County and extends into Santa Fe County. LANL is situated on the Pajarito Plateau along the eastern flank of the Jemez

Table 3. Environmental Issues Dismissed

Environmental Category	Application	Subsection
Socioeconomics	The proposed natural gas pipeline would be constructed over a period of six months. The additional revenue generated by the gas line construction project would be limited in scope and duration. There would be no increase in the number of UC employees as a result of this project. The 13 or so construction jobs for this six-month task would be filled by employees from the regional work force or from elsewhere in New Mexico. Because these temporary jobs would be filled by existing regional work force, there would be no effect on area population or increase in the demand for housing or public services in the region. Therefore, pipeline construction activities would have a negligible effect on the socioeconomic character of the surrounding communities.	N/A
Environmental Justice	Although populations that are subject to environmental justice considerations are present within 50 mi (80 km) of LANL, none of the gas pipeline routes associated with the Proposed Action are located in populated areas, therefore implementation of the Proposed Action is not expected to result in any disproportionately high and adverse human health or environmental effects on minority and low-income populations.	N/A

Mountains and consists of 49 technical areas. The Pajarito Plateau slopes downward towards the Rio Grande along the eastern edge of LANL and contains several fingerlike mesa tops separated by relatively narrow and deep canyons.

Commercial and residential development in Los Alamos County is confined primarily to several mesa tops lying north of the core LANL development, in the case of the Los Alamos town site, or southeast, in the case of the communities of White Rock, La Senda, and Pajarito Acres. The lands surrounding Los Alamos County are largely undeveloped wooded areas with large tracts located to the north, west, and south of LANL that are administered by the Department of Agriculture, Santa Fe National Forest, and the Department of the Interior (DOI), National Park Service, Bandelier National Monument; and to the east by the DOI, Bureau of Land Management.

Detailed descriptions of LANL's natural resources environment, cultural resources, socioeconomics, waste management, regulatory compliance record, and general operations are described in the SWEIS (DOE 1999a). Additional information is available in the most recent annual Environmental Surveillance Report (LANL 2001a) and the *Special Environmental Analysis for the Department of Energy, National Nuclear Security Administration, Actions taken in Response to the Cerro Grande Fire at Los Alamos National Laboratory, Los Alamos, New Mexico* (SEA) (DOE 2000a). These documents may be found in the Public Reading Room at 1619 Central Avenue, Los Alamos, New Mexico.

3.2 Potential Environmental Issues and Effects Discussions

This section addresses the issues listed in Table 2. The first part of each subsection describes the resources potentially affected by the Proposed Action or No Action Alternative. The second part analyzes the effects of the Proposed Action on that resource, and the third part describes the effect of the No Action Alternative.

3.2.1 Land Use

3.2.1.1 Affected Environment

The LANL SWEIS (DOE 1999a Volume 1 Section 4.1.1.2) notes that, “Over the years, land on LANL has been developed in response to the specific needs of a variety of users...This has led to a pattern of mixed land uses throughout the property...This makes ‘absolute’ classification of land use on LANL difficult.” The SWEIS characterized land use into six categories based on the most hazardous activities occurring in each of the 49 LANL technical areas as support, R&D, R&D/waste disposal, explosives, explosives/waste disposal, or buffer. The LANL Comprehensive Site Plan 2000 (CSP) (LANL 2000) incorporated this hazard-based land use approach and augmented it by describing and mapping 10 land use categories. The entire LANL site is designated as being in one of the following land uses: administration, experimental science, high-explosives R&D, high-explosives testing, nuclear materials R&D, physical/technical support, public/corporate interface, reserve, theoretical/computational science, and waste management.

Los Alamos Canyon falls partially within the “Omega West” Planning Area described in the CSP (LANL 2000). The plan designates this planning area as primarily reserve land. East of the LANL boundary, Los Alamos Canyon crosses the Tsankawi Unit of Bandelier National Monument, which is adjacent to, and southeast of, SR 4, and then enters San Ildefonso Pueblo land beyond. The general public uses SR 4 and the Tsankawi Unit of Bandelier National Monument.

Los Alamos Canyon is currently designated as a “reserve” in the CSP. These “reserves” are undeveloped lands that may be environmental core and buffer areas, or have other unique physical constraints such as steep slopes, wetlands, floodplains, or faults. The Los Alamos Canyon bottom is used for environmental monitoring and research and there is a Los Alamos County water well pump house building in this part of the canyon. Utility lines can be located in reserve areas. The SWEIS designates this area for support because it is undeveloped and free of hazardous activities.

3.2.1.2 Proposed Action

Land use in Los Alamos Canyon would not change if the Proposed Action were implemented. Los Alamos Canyon would continue to be used as a “reserve” for LANL. Placing a 12-in (30-cm) gas line along the floor of Los Alamos Canyon would not interfere with other existing land uses.

3.2.1.3 No Action Alternative

The No Action Alternative would result in the 12-in. (30-cm) gas line not being constructed and operated within Los Alamos Canyon. No change in land use would occur within Los Alamos Canyon or along SR 502.

3.2.2 Geologic Setting

3.2.2.1 Affected Environment

The Jemez Mountains volcanic field is located in northern New Mexico at the intersection of the western margin of the Rio Grande rift and the Jemez Lineament (Figure 4) (Gardner et al. 1986,

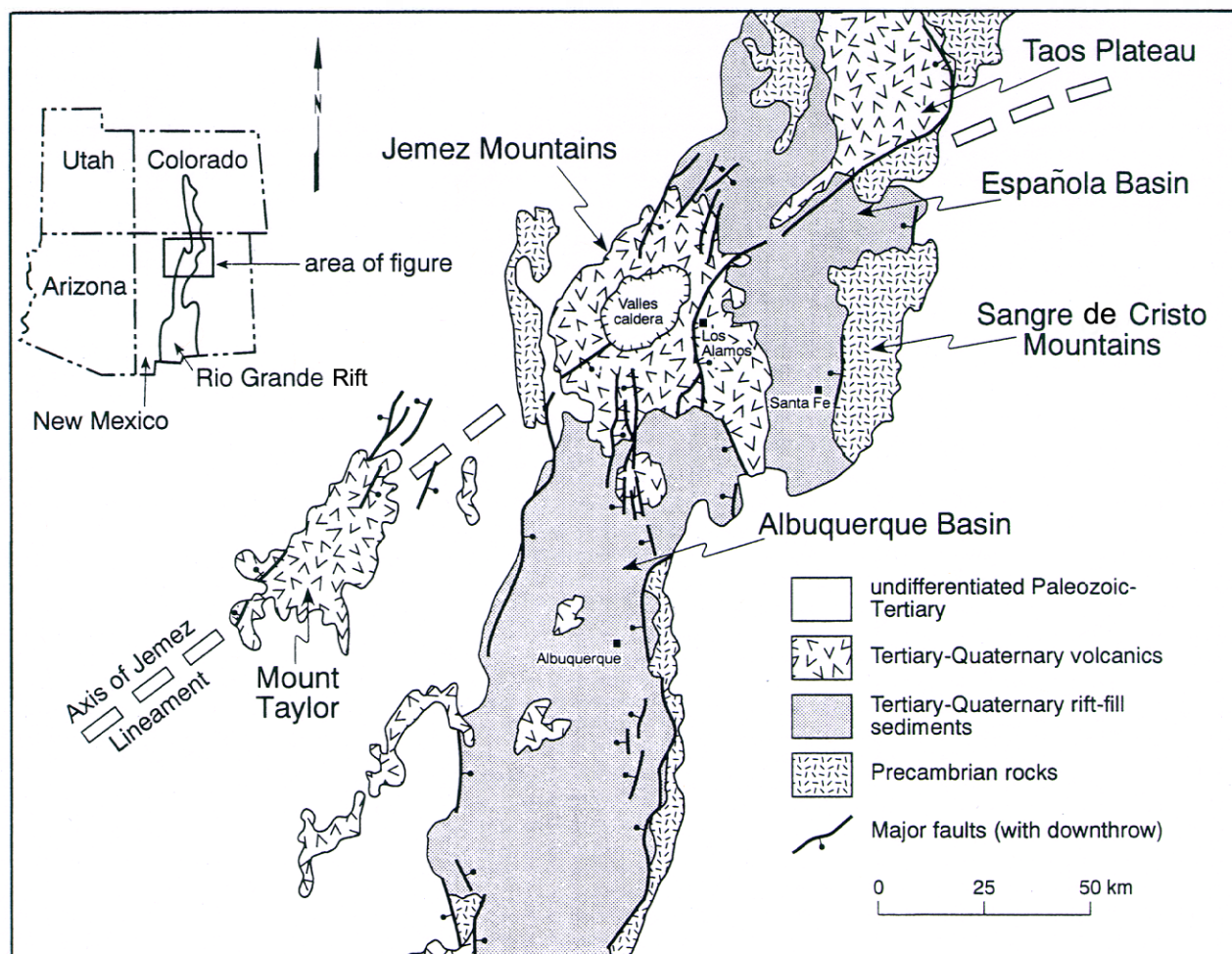


Figure 4. Generalized geologic map of the Rio Grande rift in the vicinity of the Jemez Mountains volcanic field. From Self and Sykes (1996).

Heiken et al. 1996). The Jemez Lineament is a northeast-southwest trending alignment of young volcanic fields ranging from the Springerville volcanic field in east-central Arizona to the Raton volcanic field of northeastern New Mexico (Heiken et al. 1996). The Jemez Mountains volcanic field is the largest volcanic center along this lineament (ERP 1992). Volcanism in this volcanic field spans a roughly 16-million-year period beginning with the eruptions of numerous basaltic lava flows. Various other eruptions of basaltic, rhyolitic, and intermediate composition lavas and ash flows occurred sporadically during the next 15 million years with volcanic activity culminating in the eruption of the rhyolitic Bandelier Tuff at 1.79 and 1.23 million years ago (Self and Sykes 1996). All of LANL property is within this volcanic field and is sited along the western edge of the Rio Grande rift. Most of the bedrock immediately underlying LANL is composed of Bandelier Tuff.

The geologic structure of the area is dominated by the north-south trending Pajarito Fault system. The Pajarito Fault system forms the western structural boundary of the Rio Grande rift, along the western edge of the Española Basin, and the eastern edge of the Jemez Mountains volcanic field. The Pajarito Fault system consists of three major faults and numerous secondary faults with

vertical displacements ranging from 80 ft to 400 ft (24 m to 120 m). Estimates of the timing of the most recent surface rupturing paleoearthquakes along this fault range from 3,000 to 24,000 years ago (Gardner et al. 2001).

Los Alamos Canyon cuts through the upper Tshirege Member of the Bandelier Tuff, the Cerro Toledo Interval, and into the lower Otowi Member of the Bandelier Tuff (Figure 5). Near SR 4, the canyon cuts down through the base of the Otowi Member and into the underlying Cerros del Rio basalts. The Otowi Member tends to be a slope former and the upper Tshirege Member composes the near-vertical cliffs of the canyon walls.

Rockfalls, landslides, and slope instability are triggered by any process that might destabilize supporting rocks. These are the most likely geo-hazards that could affect the Proposed Action. The natural jointing (cooling cracks) within the tuff provides pathways for water, increasing the likelihood of freeze-thaw cycles or excessive rainfalls contributing to rockfalls. Preferential erosion of weaker portions of the tuffs (by streams or rainfall) could undermine the overlying, more densely welded layers (Figure 5) resulting in rockfalls or landslides. Construction activity along the canyon sides (such as creating roads and trenches) could also contribute to slope instability. A study on potential mesa-edge stability at Pajarito Mesa (Reneau 1995) indicates that north rims display large-scale mass movement features in a zone typically 100 to 200 ft (30 to 60 m) wide. In contrast, mass wasting on south rims is dominated by infrequent failure of narrow fracture-bounded tuff blocks. The same conditions exist in Los Alamos Canyon. The frequency of failure is unknown but seismic shaking may provide a triggering mechanism.

3.2.2.2 Proposed Action

Construction, maintenance, grading, and other activities related to access roads and pipeline construction in and out of Los Alamos Canyon may have a slight effect on local geology. The current access road would need to be upgraded to support heavy truck traffic associated with the construction of the pipeline. An additional service road would also be constructed along the easement for service and maintenance of the pipeline. These activities could have a slight effect on the overall stability of the south side of the canyon. However, in general, the southern parts of the canyons tend to have more gentle slopes than north canyon walls and also have more vegetation, which acts to stabilize these southern canyon slopes. While upgrades to these roads and pipeline construction would not likely affect slope stability of the canyon walls, it is possible that road maintenance and improvements could increase the potential for soil erosion. Appropriate engineering controls and design features, as well as BMPs, installed as part of the pipeline project would contribute to slope stability and minimize erosion.

3.2.2.3 No Action Alternative

Under the No Action Alternative, roads would not be upgraded and the pipeline would not be installed. Thus, there would be no effects to local geology in Los Alamos Canyon other than the naturally occurring erosion processes.

3.2.3 Water Resources

3.2.3.1 Affected Environment

Surface water at LANL occurs primarily as short-lived or intermittent reaches of streams. Perennial springs on the flanks of the Jemez Mountains supply base flow into the upper reaches

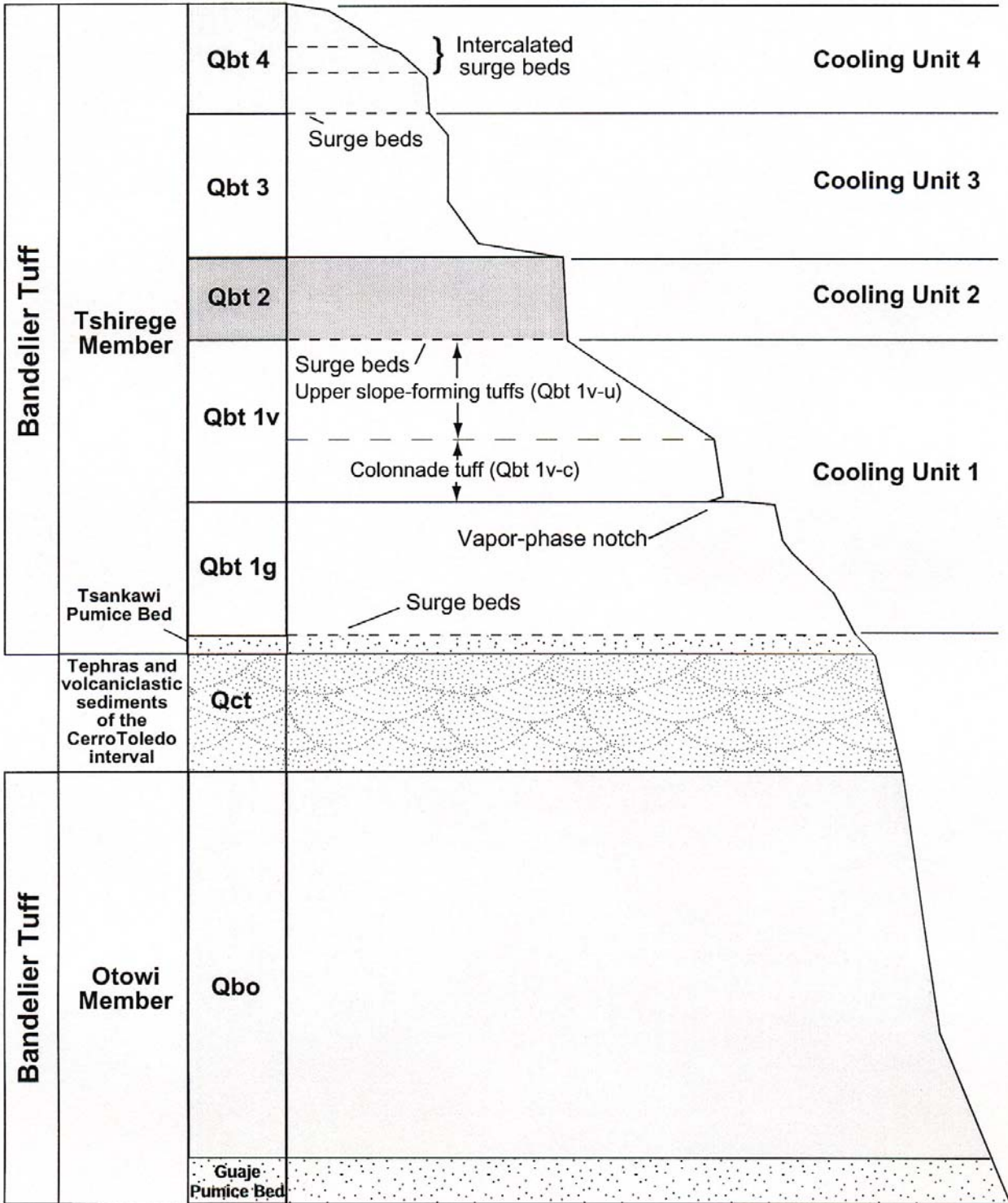


Figure 5. Stratigraphy of the Bandelier Tuff (Broxton and Reneau 1995).

of some canyons, but the volume is insufficient to maintain surface flows across LANL. Runoff from heavy thunderstorms or heavy snowmelt can reach the Rio Grande. Effluents from sanitary sewage, industrial water treatment plants, and cooling tower blow-down enter some canyons at

rates sufficient to maintain surface flows for varying distances (DOE 1999a). Surface waters at LANL are monitored by LANL and the NMED to survey the environmental effects of LANL operations. Planned releases from industrial and sanitary wastewater facilities within LANL boundaries are controlled by NPDES permits. Construction, maintenance, and environmental activities conducted within water courses are carried out under permits pursuant to sections 404 and 401 of the *Clean Water Act* (Public Law 92-500, October 18, 1972) as administered by the Surface Water Bureau of the NMED. The NMED also requires the application of BMPs to ensure compliance with New Mexico stream standards.

The nature and extent of groundwater within the LANL region have not been fully characterized. Current data indicate that groundwater bodies occur near the surface in the canyon bottom alluvium, perched at deeper levels within the alluvium, and at still deeper levels in the regional aquifer (Purtymun 1995). Alluvial groundwater bodies have been identified primarily by drilling wells in locations where impacts from LANL operations are most likely to occur (DOE 1999a). On LANL property, continually saturated alluvial groundwater bodies occur in Mortandad, Los Alamos, Pueblo, Sandia, and Pajarito Canyons. The depth to these alluvial groundwater bodies varies from approximately 90 ft (27 m) in the middle of Pueblo Canyon to 450 ft (135 m) in lower Sandia Canyon (LANL 1993). The main aquifer is separated from the alluvial groundwater bodies by 350 to 620 ft (105 to 186 m) of unsaturated volcanic tuff and sediments (Purtymun 1995). Recharge of the aquifer is not fully understood nor characterized and it is not strongly interconnected across its extent. Groundwater within the LANL area is monitored to provide indications of the potential for human and environmental exposure from contaminants (DOE 1999a). Groundwater protection and monitoring requirements are included in DOE Order 5400.1, General Environmental Protection Program.

Data and analysis of LANL surface and groundwater quality samples taken from test wells indicate that past LANL operations and activities have affected the surface water within LANL boundaries and some of the alluvial groundwater zones in the LANL region as well. Details on the surface and groundwater quality can be found in the annual LANL Environmental Surveillance and Compliance Report (LANL 2001a).

The LANL Environmental Restoration Program has produced detailed reports on the amount of contamination in Los Alamos Canyon (LANL 1998) and DP Canyon (LANL 1999), a tributary of Los Alamos Canyon. The following summary, contained in the next paragraph, is derived from these reports.

Several former LANL sites within the DP Canyon and Los Alamos Canyon watersheds contributed or may have contributed contaminants to these canyons beginning in 1943. Contaminants include americium-241 (^{241}Am), plutonium-238 (^{238}Pu), plutonium-239 (^{239}Pu), plutonium-240 (^{240}Pu), cesium-137 (^{137}Cs), strontium-90 (^{90}Sr), tritium, uranium isotopes, metals, various organic compounds, diesel range organic hydrocarbon contamination, septic tank outfalls, and surface water runoff from the Los Alamos town site. The most significant contaminant from a human health perspective is ^{137}Cs in the sediments of upper Los Alamos Canyon. These contaminants have been distributed by floods along the full length of upper Los Alamos Canyon and have been dispersed laterally away from the stream channel from 16 to 83 ft (5 to 25 m). Radionuclide concentrations are generally higher in fine-grained sediments. In Los Alamos Canyon, the highest concentrations of ^{241}Am , ^{238}Pu , ^{137}Cs , ^{90}Sr , and tritium are found

close to DP Canyon with much lower concentrations downstream near the White Rock Y (LANL 1998). Soils within the canyon bench areas are not expected to be contaminated to the same degree as floodplain sediments (if at all).

High- and moderate-severity fire increases the potential for surface runoff and soil erosion by removing vegetation and surface organic layers and increasing soil hydrophobicity. The Cerro Grande Fire increased the potential for storm water runoff through the canyons. For example, in Pueblo Canyon (one of the most severely burned areas), peak flows increased 16 times over pre-fire conditions. Details of flow rate increases can be found in the SEA (DOE 2000a). Studies are currently underway using data obtained from gauging stations, rainfall, vegetation regrowth, and other sources to model how water flows and sedimentation rates would change over the years as the forests recover from the fire. Currently, only one year's worth of data have been collected and thus there is insufficient information to perform predictive modeling. The data collected so far show little recovery. Peak observed flows before the Cerro Grande Fire were usually less than 20 to 30 cubic feet per second (cfs) (0.6 to 0.8 cubic meters per second [m^3/s]). Peak flows after the fire can be as high as 1,300 cfs ($36 \text{ m}^3/\text{s}$) as determined by modeling of a 100-year design event (Springer 2002) but a stabilization of the watershed ecology along the burned area of the Pajarito Plateau will likely occur within the next decade. An absolute return to "pre-fire" conditions could take decades (Springer 2002). With increased runoff and erosion, the potential for the migration of contaminants throughout the canyons has increased. The most recent floodplain modeling efforts (LANL 2002) indicate that the post-fire floodplain in the vicinity of the pipeline is no longer estimated as being from canyon-wall-to-canyon-wall. A map of the current floodplain can be found in the appendix.

3.2.3.2 Proposed Action

Construction of the natural gas pipeline may have a slight temporary, short-term effect on surface water quality in Los Alamos Canyon. The Proposed Action would involve heavy machinery to improve access roads, trenching, and leak testing of the newly constructed pipeline. Leak testing the pipeline with water could result in the release of thousands of gallons of water onto the easement. This water would be tested for contaminants and hazardous constituents before release. Where the proposed pipeline route crosses the streambed, PNM (or their subcontractor) would bore under the streambed in order to place pipe without disturbing the streambed and floodplain sediments. The stream channel could be affected by equipment crossing the channel or by the introduction of fill into the channel. When setting up the equipment to bore under the streambed, PNM or their subcontractor would use BMPs to keep any fill from being introduced into the channel.

BMPs derived from the SWPP Plan would also be implemented to prevent erosion and migration of disturbed soil from along the pipeline caused by storm water or other water discharges. If soil and sediment contamination levels in the proposed easement within Los Alamos Canyon are relatively low, as expected, erosion and transportation of these sediments may have a inconsequential effect, if any, on water quality.

3.2.3.3 No Action Alternative

There would be no effects to water quality under the No Action Alternative. No construction activities would be undertaken. BMPs to prevent erosion effects are already in place along SR 502.

3.2.4 Floodplains/Wetlands

3.2.4.1 Affected Environment

Los Alamos Canyon is approximately 20 mi (32 km) long (from its headwaters to the Rio Grande), and from 1,387 ft (416 m) (minimum) to 2,434 ft (730 m) (maximum) wide (within the area of the gas line route). There are scattered wetlands, potential wetlands, and riparian vegetation in the streambed and along the stream sides throughout the canyon. The stream is intermittent in nature and usually flows only during spring runoff and storm events. The wetland and riparian vegetation, although scant, helps retain soil and serves to slow streambed erosion. There is a small (0.5 ac [0.2 ha]) potential wetland area that may be developing at the low-head weir detention basin located near the intersection of SR 502 and SR 4 (see appendix). The low-head weir was constructed in 2000 after the Cerro Grande Fire. The vegetation in this area is primarily piñon-juniper (*Pinus edulis* Englem.)-(*Juniperus monosperma* L.); however, the settling basin was planted with cottonwood (*Populus fremontii* S. Wats.) and willow (*Salix exigua* Nutt.) seedlings. The new vegetation may or may not become established over time; as the upper portions of the watershed recover and stabilize, the amount of storm water runoff down the canyons is expected to decrease. There likely will not be enough water to sustain wetland species this far downstream within Los Alamos Canyon.

The SEA (DOE 2000a) describes all the actions taken by NNSA in response to the Cerro Grande Fire, particularly for floodwater control. As a result of the fire, the potential for soil erosion, debris, water, ash, and silt has increased exponentially compared to pre-fire ratios. Mitigation measures for these conditions include revegetation, channel work, and debris clean up in floodplains, all of which are being conducted at LANL.

DOE's 10 CFR Part 1022.4 defines a flood or flooding as “. . . a temporary condition of partial or complete inundation of normally dry land areas from . . . the unusual and rapid accumulation of runoff of surface waters. . . .” The base floodplain is the area inundated by a flood having a 1.0 percent chance of occurrence in any given year (referred to as the 100-year floodplain [LANL 2002]). The critical-action floodplain is the area inundated by a flood having a 0.2 percent chance of occurrence in any given year (referred to as the 500-year floodplain).

3.2.4.2 Proposed Action

No long-term effects to the floodplain or the wetland areas (or potential wetland areas) in Los Alamos Canyon would be likely. The gas pipeline easement would be adjacent to, and south of, the Los Alamos Canyon floodplain (the floodplain extends for the entire length of the canyon with variable widths [LANL 2002]) and the streambed areas. A floodplain/wetland assessment is included as an appendix in this EA. The proposed construction would consist of trenching in Los Alamos Canyon mostly along a natural bench above the floodplain area. During construction, a loss of approximately 17.5 ac (7.0 ha) of vegetated area, along with an expected average of a 50-ft- (15-m-) wide corridor is expected. Part of the pipeline construction would bore under the streambed so that the streambed would not be directly disturbed. BMPs and

mitigation actions would be implemented during and after the construction phase to reduce or eliminate erosion. Removal of canyon slope habitat would not occur.

Vegetation removal and trenching would expose mineral soils because of excavation and the use of heavy equipment. BMPs for runoff control, such as silt barriers, would be used during this project. Siltation into the stream would be minor and temporary in nature. Wetland areas would be avoided and the pipeline would be bored under the streambed thereby avoiding disturbance to riparian vegetation. Downstream floodplain and wetland values potentially effected by the proposed gas line project could include a slight alteration of flood-flow retention times; a slight alteration of wildlife nesting, foraging, or resting habitat; a slight redistribution of sediments and sediment retention-time changes. However, with the use of BMPs, no adverse effects to wetlands functions downstream of the pipeline would be likely.

3.2.4.3 No Action Alternative

Under the No Action Alternative, the new gas line would not be installed in Los Alamos Canyon. There would be no effect on floodplains or wetlands under the No Action Alternative.

3.2.5 Biological Resources

3.2.5.1 Affected Environment

A number of regionally protected and sensitive (rare or declining) species have been documented in the LANL region. These include three Federally-listed endangered species (the whooping crane [*Grus americana*], the southwestern willow flycatcher, and the black-footed ferret [*Mustela nigripes*]) and two Federally-listed threatened species (the bald eagle [*Haliaeetus leucocephalus*] and the Mexican spotted owl). Under the *Endangered Species Act of 1973* (16 U.S.C. 1531 et seq.) as amended, government agencies are required to consider the potential effects of all its activities on Federally-listed threatened and endangered species and their critical habitat.

The LANL Threatened and Endangered Species HMP establishes areas of environmental interest (AEIs) that are being managed and protected because of their significance to biological or other resources. Potential or known occupied habitats of threatened or endangered species that occur or may occur at LANL are designated as AEIs. In general, an AEI consists of a core area that contains important breeding or necessary survival habitat for a specific species and buffer area around the core area. The core and buffer areas are protected from disturbances for certain activities, including construction. For instance, activities are restricted in a core and buffer area during breeding season until it is determined that the habitat is not occupied by individuals of a listed species for that year. LANL UC personnel perform annual surveys of the AEI early in the breeding season to determine the presence of listed species breeding pairs. If the habitat is occupied, the restrictions remain in place until the completion of the breeding season. Any activities that cannot be conducted within the guidelines of the HMP require further consultation with the U.S. Fish and Wildlife Service.

Seven years of Mexican spotted owl surveys have been conducted within Los Alamos Canyon (Keller 2002). These surveys did not locate Mexican spotted owls, but potential habitat necessary for this species exists within the project area.

The proposed pipeline route transects areas of ponderosa pine forest on the western end and piñon/one-seed juniper woodland in the eastern end of the canyon; native understory species are present along the entire route. There has been previous disturbance along the south side of the canyon bottom where electric power lines were installed many years ago. Ponderosa pines have grown up around and under most of the existing power line easement. Although these pines are not as large as other pines found on the south side of the canyon bottom, this area is heavily forested and will be subjected to tree thinning procedures under LANL's Wildfire Hazard Reduction Program. Most of the north-facing slope (south side of the canyon) is heavily vegetated all the way up the canyon wall.

Larger wildlife species, such as elk and deer, move through Los Alamos Canyon including the proposed gas line construction area and the existing utility easement. A variety of small mammals, birds, reptiles, and insects occupy Los Alamos Canyon including the area around the proposed pipeline easement.

3.2.5.2 Proposed Action

Implementation of the Proposed Action is not expected to result in any adverse effects to individuals of Federally-protected threatened or endangered species or their critical habitat. Minimal short-term and long-term effects to vegetation and biota are expected from construction and operation of the proposed gas pipeline.

Under the Proposed Action, vegetation within the canyon bottom would be disturbed and cleared within a 50-ft- (15-m-) wide corridor for the length of the proposed gas line. The land proposed for the construction activity is approximately five percent unvegetated with the remainder of the proposed easement corridor covered with native vegetation. A 10-ft (3-m) -wide access road would be constructed within the easement along the length of the pipeline for maintenance after the pipeline is installed. Once the project is completed, native species of grasses would be reseeded along the easement. Effects to non-woody vegetation would be short term.

Trees would be removed within the existing electric utility easement along the proposed gas line easement. Reforestation of the area would likely occur over the next several decades but trees would be removed and the area would be maintained in a fashion that is conducive to effective wildfire hazard management. PNM personnel conducting annual leak surveys of the new gas pipeline would monitor vegetation regrowth along the easement during these surveys. The long term maintenance of the proposed gas line would be expected to have minimal long-term effects on woody vegetation.

Large mammal migration would be temporarily disturbed during the construction activities. Most of these species, however, would likely continue using the canyon corridor for foraging and migration purposes after the construction of the gas line was finished. Similarly, small mammals in the project area would avoid the site during the construction phase, but would return to the pipeline area after construction was completed. This avoidance of the area by large and small mammals would be a short-term, temporary effect.

Of the Federally-listed threatened or endangered species potentially present at LANL, the project area falls within an AEI for the Mexican spotted owl. Tree removal would decrease the potential Mexican spotted owl habitat within Los Alamos Canyon. Removal of overstory trees would also

open the canopy and increase light and heat penetration. The area of sensitive habitat disturbed would be less than approximately 1.75 ac (0.7 ha) if an expected 50-ft (15-m) -wide corridor is maintained. This is less than one percent of the total available foraging and roosting habitat at this LANL AEI. Site-specific surveys would be performed before the beginning of construction activities to determine if owls are using the Los Alamos Canyon AEI. If owls are not present in the construction zone, the work would be allowed to commence and continue until completed. If owls are present in the project area, time restrictions on initiation of work activities would be imposed and construction would not be allowed to occur between March 15th and May 30th, and may be restricted further until September 1st depending on owl activity within the AEI. All provisions of the LANL Threatened and Endangered Species HMP would be followed so that no adverse effects to individual Mexican spotted owls or their critical habitat would be expected.

The Proposed Action area has also been designated as a potential bald eagle foraging habitat. However, the Proposed Action represents a small fraction of the total foraging habitat available to this species throughout LANL. Disturbance to the bald eagle foraging habitat would be temporary in nature and would only occur during the gas line construction so that the overall effect to the foraging area available to this species would be minor and is not expected to be adverse.

3.2.5.3 No Action Alternative

Under the No Action Alternative, a new gas line would not be installed in Los Alamos Canyon. There would be no habitat disturbances and, therefore, no effects on biological resources.

3.2.6 Air Quality

3.2.6.1 Affected Environment

Air quality is a measure of the amount and distribution of potentially harmful pollutants in ambient air⁵. Air surveillance at Los Alamos includes monitoring emissions to determine the air quality effects of LANL operations. UC staff calculate annual actual LANL emissions of regulated air pollutants and report the results annually to the NMED. The ambient air quality in and around LANL meets all Environmental Protection Agency (EPA) and DOE standards for protecting the public and workers (LANL 2001a).

Both EPA and NMED regulate nonradioactive air emissions. NMED does not regulate dust from excavation or construction, but BACMs must be used when appropriate to control fugitive dust and particulate emissions. Annual dust emissions from daily windblown dust are generally higher than short-term construction-related dust emissions.

Excavation and construction activities are not considered stationary sources of regulated air pollutants under the New Mexico air quality requirements. Mechanical equipment associated with the construction phase of this project, including bulldozers, trenchers (trackhoes), excavators, side booms, tamper compactors, forklifts, and backhoes are exempt from permitting.

⁵ Ambient air is defined in 40 CFR 50.1 as “that portion of the atmosphere external to buildings, to which the public has access.” It is defined in the New Mexico Administrative Code (NMAC) Title 20, chapter 2, part 72, as “the outdoor atmosphere, but does not include the area entirely within the boundaries of the industrial or manufacturing property within which the air contaminants are or may be emitted and public access is restricted within such boundaries.”

Mobile sources, such as automobiles and construction vehicles, are additional sources of air emissions; however, mobile sources and diesel emissions from conveyance vehicles are not regulated by NMED.

3.2.6.2 Proposed Action

Construction of the Los Alamos Canyon gas line would result in short-term, temporary, localized emissions associated with vehicle and equipment exhaust as well as particulate (dust) emissions from excavation and construction activities. The air emissions would not be expected to exceed either the National Ambient Air Quality Standards or the New Mexico Ambient Air Quality Standards. The new gas line would not result in additional air emissions from existing gas-fired equipment at LANL. Effects of the Proposed Action on air quality would be negligible compared to annual air emissions from LANL as a whole.

3.2.6.3 No Action Alternative

No construction activities would occur under the No Action Alternative. There would be no change from ambient air quality effects associated with implementing the No Action Alternative.

3.2.7 Visual Resources

3.2.7.1 Affected Environment

Los Alamos Canyon is relatively undeveloped. Although there are no vistas from the bottom of the canyon, the area possesses desirable aesthetic qualities. The vegetation within the canyon is mixed. The canopy cover on the south side of the canyon along the existing electric distribution line contains sparse to moderately dense small-diameter ponderosa pine trees. The north side of the canyon contains more mature piñon-juniper woodland.

The principal humanmade features that contrast with the existing natural environment are an electric distribution line along the south side of the canyon, a dirt road that meanders along the canyon bottom, and a scar on the north face of the canyon where the existing gas pipeline crosses the canyon at the western end of the proposed gas pipeline easement.

Vehicles traveling on SR 4 cross an open area of Los Alamos Canyon at the eastern LANL boundary. Most of the area in which the proposed pipeline would be constructed is largely screened from vehicular traffic but is visible by hikers using nearby trails along the mesa top and canyon side as well as people passing along the road through the canyon bottom.

3.2.7.2 Proposed Action

Heavy equipment, hauling operations, staging areas, and site preparation activities would create local temporary adverse visual effects, particularly near the intersection of Los Alamos Canyon with SR 4. Over the long term, the aesthetic qualities of the canyon would be restored to a large extent by reseeding of the areas affected by construction. Short term, clearing the trees within the easement could cause an adverse effect on area aesthetic qualities. Along segments of pipeline constructed in forest areas, this effect would be less noticeable after tree thinning occurred in the canyon area as part of the LANL Wildfire Hazard Reduction Program. Long term, this visual quality effect would not likely be adverse.

Construction could temporarily create a linear area of cleared vegetation that would expose more of the canyon to the view of travelers driving on SR 4. This lineal feature could disrupt the visual quality of the canyon to both travelers on SR 4 and to hikers on the Breakneck Trail, particularly in the short term. As vegetation is reestablished, the aesthetic qualities of the canyon would be largely restored. Views of Los Alamos Canyon from the mesa top Anniversary Trail would be more affected because the south side of Los Alamos Canyon is more visible from the Anniversary Trail than is the north side of the canyon.

3.2.7.3 No Action Alternative

There would be no effects to visual resources under the No Action Alternative. No changes in the vegetation or constructed features in the canyon bottom would occur under this alternative.

3.2.8 Cultural Resources

3.2.8.1 Affected Environment

Cultural resources include any prehistoric sites, buildings, structures, districts, or other places or objects considered to be important to a culture or community for scientific, traditional, religious, or any other reason. They combine to form the human legacy for a particular place (DOE 1999a). To date, over 1,950 archaeological sites and historic properties have been recorded at LANL.

The criteria used for evaluating cultural resources depend upon their significance as sites eligible for listing to the National Register of Historic Places as described in the *National Historic Preservation Act* (16 United States Code 470). These determinations of significance are met by evaluating each cultural resource based on it meeting any one or more of the following criteria:

- association with events that have made a significant contribution to the broad pattern of our history,
- association with the lives of persons significant in our past,
- illustration of a type, period, or method of construction; for its aesthetic values or for its representation of the work of a master; or if it represents a significant and distinguished entity whose components may lack individual distinction, and
- it has yielded, or may be likely to yield, information important in prehistory or history.

3.2.8.2 Proposed Action

There are 13 prehistoric sites and one historic trail located within 250 ft (75 m) of the proposed gas pipeline easement. The prehistoric sites consist of one garden plot, two pueblo room blocks, eight one- to three-room structures, one lithic scatter, and one rock and wood enclosure. These prehistoric sites are predominantly from the Coalition or Classic Periods (Ancestral Pueblo). A Homestead Period historic trail traverses the floor of Los Alamos Canyon in an east-west direction. The pipeline easement would be sited so that it would avoid prehistoric cultural resources. Therefore, the construction, operation, and maintenance of the new gas mainline in Los Alamos Canyon would not affect the recorded prehistoric archaeological sites in the area.

At two locations the proposed gas line would cross the original location of the Los Alamos Canyon Trail, which was one of the original routes from the Rio Grande to Los Alamos Mesa.

However, in previous years the trail location has been bladed and it currently serves as the Los Alamos Canyon access road. As a result, the original trail has been destroyed and the trail is no longer of historic value.

All of the significant and potentially significant cultural resources in the vicinity of the proposed easement would be protected by avoidance. Under the Programmatic Agreement (DOE 2000b) between NNSA and the New Mexico State Historic Preservation Office (SHPO), the SHPO would be notified that there would be no effect to cultural resources by the Proposed Action if NNSA decides to proceed with the granting of the easement to PNM.

3.2.8.3 No Action Alternative

Implementing the No Action Alternative would result in no affect to cultural resources within Los Alamos Canyon. No construction activity would occur under this alternative.

3.2.9 Utilities and Infrastructure

3.2.9.1 Affected Environment

Section 4.9.2 of the 1999 LANL SWEIS (DOE 1999a) describes utility and infrastructure services at LANL. The utilities and infrastructure in and around LANL under the Preferred Alternative selected in the SWEIS ROD are described in detail in Section 5.5.9.2 of the SWEIS. Utility systems at LANL include electrical service, natural gas pipeline, communications lines, steam lines, potable water lines, sanitary wastewater and storm water lines, and refuse collection. The CSP (LANL 2000) documents that portions of the existing 62 mi (100 km) of gas distribution lines at LANL are about 50 years old or older, and that building redundancy into the system is necessary to avoid potential curtailment of a large percentage of LANL operations in the event of a disruption.

The SWEIS Yearbook–2000 (LANL 2001d) notes that total gas consumption in FY 2000 was less than projected by the SWEIS ROD (1.84 million decatherms) because of warmer than normal weather; however, more gas than anticipated was used for electric generation at the TA-3 power plant. According to the Yearbook, LANL used about 1.43 million decatherms of natural gas in FY 2000 and approximately 90 percent of this was used for heating (both steam and hot air). The remainder was used for electrical production to provide the difference between peak load demands and electric contractual import rights.

The SWEIS ROD issued by the DOE in 1999 required the preparation of a Mitigation Action Plan for assuring electrical power availability to carry out the mission requirements of the expanded operations alternative. NNSA is considering the installation of a third electric transmission line and a 20-megawatt natural gas combustion turbine within the TA-3 South Mesa 22 Power Plant complex to provide reliable, onsite electricity to LANL. A separate EA for the proposed electric line was issued together with a Finding of No Significant Impact on March 9, 2000. The EA for the proposal to install a new gas combustion turbine is under preparation.

3.2.9.2 Proposed Action

There is an existing electrical distribution power line easement alongside the proposed alignment of the new 12-in. (30-cm) gas transmission line up Los Alamos Canyon. There is also a water supply well that is located along the south wall of the canyon near the proposed tie-in with the

existing gas transmission mainline. The proposed gas transmission line would not affect either the electrical distribution line or the water supply well located in Los Alamos Canyon. The proposed gas transmission line would enhance the reliability of gas supply at LANL by providing system redundancy in the event of service disruptions. Since natural gas is used to generate some onsite electricity at LANL, the new gas line would also ensure the reliability of adequate electric power production and supply at LANL.

3.2.9.3 No Action Alternative

Under the No Action Alternative, the proposed 12-in. (30-cm) gas transmission line would not be built and therefore the existing electrical distribution line or the water supply well located in Los Alamos Canyon would not be affected. The No Action Alternative would also mean that LANL would not have the desired redundancy in gas supply. This could affect the reliability of natural gas supplies to LANL and the Los Alamos town site in the event of a service disruption. This could, in turn, affect the ability to heat buildings and generate onsite electricity using gas-fired steam generators and turbines.

3.2.10 Noise

3.2.10.1 Affected Environment

Noise is defined as unwanted sound. Noise is categorized into two types: *steady-state noise*, which is characterized as longer duration and lower intensity, such as a running motor, and *impulse or effect noise*, which is characterized by short duration and high intensity, such as the detonation of high explosives. The intensity of sound is measured in decibel (dB) units. In sound measurements relative to human auditory limits, the dB scale is modified into an A-weighted frequency scale (dBA).

Noise measured at LANL is primarily from occupational exposures. Occupational exposure data are compared against an established occupational exposure limit (OEL). At LANL, the OEL is administratively defined as noise to which a worker may be exposed for a specific work period without probable adverse effects on hearing acuity. The maximum permissible OEL for steady-state noise is 84 dBA for each 8-hour work period. The OEL for impulse and effect noise is not fixed because the number of effects allowed per day varies depending on the dBA of each effect. DOE also requires that Action Levels (levels of exposure to workplace hazards that are below the OEL but require monitoring or the use of PPE) be established for noise in the workplace. Action levels at LANL for steady-state noise and impulse and effect noise are 80 dBA and 140 dBA for each 8-hour day, respectively.

Environmental noise levels at LANL are measured outside of buildings and away from routine operations. The following are typical examples of sound levels (dBA) generated by barking dogs (58), sport events (74), nearby vehicle traffic (63), aircraft overhead (66), children playing (65), and birds chirping (54). Sources of environmental noise at LANL consist of background sound, vehicular traffic, routine operations, and periodic high explosives testing. Measurements of environmental noise in and around LANL facilities and operations average below 80 dBA.

The averages of measured values from limited ambient environmental sampling in Los Alamos County were found to be consistent with expected sound levels (55 dBA) for outdoors in residential areas. Background sound levels at the White Rock community ranged from 38 to 51

dBA (Burns 1995) and from 31 to 35 dBA at the entrance of Bandelier National Monument (Vigil 1995). The minimum and maximum values for Los Alamos County ranged between 38 dBA and 96 dBA, respectively. Because of the isolated location of the proposed gas line in Los Alamos Canyon, ambient noise levels in the vicinity of the line are typical of undeveloped outdoor areas.

3.2.10.2 Proposed Action

The Proposed Action would result in limited short-term increases in noise levels associated with pipeline construction activities. Following the completion of these activities, noise levels would return to preconstruction levels. Noise generated by the Proposed Action is not expected to have an adverse effect on either UC and non-UC construction workers or on PNM maintenance workers.

The construction of the gas pipeline would require the use of heavy equipment for clearing of the easement, removal of dirt, rock, and vegetation, and for hauling and placing pipe. Heavy equipment such as front-end loaders and backhoes would produce intermittent noise levels at around 73 to 94 dBA at 50 ft (15 m) from the work site under normal working conditions (Canter 1996, Magrab 1975). Truck traffic would occur frequently but would generally produce noise levels below that of the heavy equipment. No high explosives or other noise generating operations or equipment would be used during construction or to perform routine maintenance. Workers would be required to have hearing protection if site-specific work produced noise levels above the LANL action level of 80 dBA for steady-state noise. Based upon a number of physical features, such as attenuation factors, noise levels should return to background levels within about 200 ft (66 m) of the noise source (Canter 1996). Since sound levels would be expected to dissipate to background levels before reaching publicly accessible areas or undisturbed wildlife habitats, they should not be noticeable to nearby workers or members of the public, nor should they disturb local wildlife. In addition, any elevated noise levels would occur for a short duration only (six months at the most). Traffic noise from pipeline construction workers (about 13 workers) would not increase the present traffic noise level on roads at LANL. Therefore, noise levels are not expected to exceed the established OEL.

No adverse effects on either UC or PNM maintenance workers, the public, or the environment would be expected from noise levels generated by routine maintenance operations under the Proposed Action. Noise generated by these activities would be very short term in duration, of low intensity, and highly localized in remote and unoccupied areas at LANL.

3.2.10.3 No Action Alternative

Under the No Action Alternative, ambient noise levels would remain unchanged in the vicinity of the proposed pipeline corridor in Los Alamos Canyon. Noise from construction activities associated with the Proposed Action would not occur. Environmental noise levels in and around Los Alamos Canyon and the existing gas pipeline under SR 502 would be expected to remain below 80 dBA on average.

3.2.11 Human Health

3.2.11.1 Affected Environment

This section considers the health of UC workers, non-UC workers, and PNM construction and maintenance workers. These two categories are considered in this EA because each category of worker would either be involved in the site inspections or the construction and maintenance of the new gas line under the Proposed Action. Members of the public are not considered because they are not likely to be affected by construction activities, routine maintenance, or any credible accident scenarios that could result from the Proposed Action.

The health of LANL workers is routinely monitored depending upon the type of work performed. Health monitoring programs for LANL workers consider a wide range of potential concerns including exposures to radioactive materials, hazardous chemicals, and routine workplace hazards. In addition, LANL workers involved in hazardous operations are protected by engineering controls and required to wear appropriate PPE. Training is also required to identify and avoid or correct potential hazards typically found in the work environment and to respond to emergency situations. Because of the various health monitoring programs and the requirements for PPE and routine health and safety training, LANL workers are generally considered to be a healthy workforce with a below average incidence of work-related injuries and illnesses.

UC staff monitor environmental media for contaminants that could affect non-UC workers or members of the public. This information is reported to regulatory agencies, such as the NMED and to the public through various permit requirements and reporting mechanisms and it is used to assess the effects of routine operations at LANL on the general public. For detailed information about environmental media monitoring and doses to the public, see LANL's Environmental Surveillance Report for 2000 (LANL 2001a). For those persons who work within the boundaries of LANL as subcontractors or utility workers and could be exposed to radioactive or other hazardous materials, their exposures are monitored in the same manner as UC workers. In addition, site-specific training and PPE requirements would also apply to these workers.

The preliminary assessments of potential human health (including risks for construction workers⁶) and ecological risk presented in the LANL Environmental Restoration Program reports regarding Los Alamos Canyon and DP Canyon (LANL 1998 and 1999, respectively) indicate that levels of contamination in the floodplain sediments of upper Los Alamos Canyon and DP Canyon do not pose an unacceptable human health or environmental risk or require immediate remedial actions with regard to present-day land use (including "construction worker").

⁶ The construction worker scenario in the human health risk assessment is based upon a 250-day work year with eight-hour days. The duration of the scenario is one year, and all activities occur within sediment layers that contain contaminants above background values. The involved individual worker ingests soil at a rate of 480 mg/day and inhales soil as airborne dust at a rate of 2 mg/day. Possible construction activities in upper Los Alamos Canyon under present-day land use conditions include the construction or maintenance of roads and the excavation of trenches for sewer lines or other purposes. These activities would likely involve uncontaminated parts of the canyon floor as well as contaminated areas and would likely have actual durations of less than one year; therefore, this assessment provides conservative estimates of risk (LANL 1998).

3.2.11.2 Proposed Action

Pipeline construction and maintenance work planned under the Proposed Action would not be expected to have any adverse health effects on UC workers. UC workers would not be directly involved in the construction of the proposed gas pipeline. Non-UC support and maintenance contractors would be actively involved in the construction activities, routine site inspections, and testing of the pipeline. Approximately five UC workers would perform site inspections or monitor construction activities during periods of peak activity. Applicable safety and health training and monitoring, PPE, and work-site hazard controls would be required for all site workers.

The Proposed Action is not expected to result in adverse effects on the health of non-UC construction or maintenance workers. Approximately 20 to 30 construction workers would be actively involved in potentially hazardous activities such as heavy equipment operations, including several heavy debris removal vehicles, and removal of excess dirt and vegetation from pipeline construction activities. Construction activities could begin in early 2003 and would last for about six months. Potentially serious exposures to various hazards or injuries are possible during the pipeline construction and testing under the Proposed Action. Risks of incidents and injuries that could occur range from relatively minor incidents (e.g., respiratory irritation, cuts, or sprains) to major injuries (e.g., broken bones or asphyxiation). To prevent serious injuries, all site workers are required to submit and adhere to a Construction Safety and Health Plan. This plan is reviewed by UC staff before construction activities can begin. Following review of this plan, UC site inspectors would routinely verify that site workers are adhering to the plan, including applicable Federal and state health and safety standards. In addition, UC staff would provide site-specific hazard training to construction contractors as needed. Adherence to a reviewed plan, use of PPE and engineered controls, and completion of appropriate hazards training are expected to help prevent adverse health effects on construction workers.

Routine maintenance of the new gas pipeline would be performed primarily through site visits that include driving or walking the length of the line, and cathodic and leak testing of the pipeline itself. For maintenance that requires the repair or removal of any portion of the pipeline, soil and pipe excavation could be required and some heavy equipment may be needed. Hazards associated with the routine maintenance of the pipeline would pose no hazard to UC workers and only a minimal health risk to non-UC maintenance workers employed by PNM or their subcontractors. Adherence to required and applicable hazard control plans, monitoring of potential hazards, and completion of appropriate worker training would help to prevent adverse health effects on these workers.

3.2.11.3 No Action Alternative

Under the No Action Alternative, there would be no potential for injuries to UC or non-UC construction or maintenance workers. There would also not be any potential for injuries to members of the public from construction and operation of the proposed gas pipeline. No exposures to hazardous working conditions would occur on DOE-administered lands because no construction activities would take place. However, routine maintenance of the existing gas pipeline under SR 502 would continue and would probably increase over time because of the condition of the pipeline. An increase in maintenance activities would increase the potential for adverse health effects to maintenance workers. With the use of appropriate worksite controls

and monitoring, PPE, and worker training programs, an increase in actual PNM maintenance worker injuries would be unlikely.

3.2.12 Waste Management/Environmental Restoration

3.2.12.1 Affected Environment

LANL generates solid waste⁷ from construction, demolition, and facility operations. These wastes are managed and disposed of at appropriate solid waste facilities. Both UC-LANL and Los Alamos County use the same solid waste sanitary landfill located within LANL boundaries. The Los Alamos County Landfill also accepts solid waste from other neighboring communities. The Los Alamos County Landfill receives about 52 tons per day (47 metric tons per day), with LANL contributing about 8 tons per day (7 metric tons per day), or about 15 percent of the total. Current plans (as of May 8, 2002) are to close the Los Alamos County Landfill by June 30, 2004. Several possible landfills located within New Mexico could be used by UC-LANL and Los Alamos County after 2004.

Building debris storage yards on Sigma Mesa (TA-60) or other approved areas are used by LANL to store concrete, soil, and asphalt debris for future use at LANL. Low-level radioactive waste is disposed of at LANL, in Area G at TA-54, or may be shipped to appropriate permitted facilities. Hazardous waste⁸ regulated under RCRA is transported to TA-54 at LANL for proper management, which is carried out in accordance with applicable laws, regulations, and DOE

Orders. Hazardous waste and mixed wastes are treated and disposed of offsite because LANL has no onsite disposal capability for these waste types. The offsite disposal locations are located across the U.S. and are audited for appropriate regulatory compliance before UC-LANL sends waste to these disposal site locations.

3.2.12.2 Proposed Action

LANL waste management would be slightly affected by implementing the Proposed Action. PNM or their subcontractors would be responsible for site waste removal and disposition. LANL waste management would accept waste generated by the project only in the case of radioactive waste. The Proposed Action would generate solid waste such as spent welding rods and waste paper products. This material would be removed from the construction site and disposed of at the Los Alamos County Landfill or another permitted facility. Excess pipe would be removed by PNM for future use elsewhere. Any brush, trees, or vegetation waste resulting from the Proposed Action would be chipped onsite and spread on the easement. Chipped material would not be spread in or near any waterway. Since the bulk of the proposed pipeline route is not located within the floodplain, it would be possible to arrange for none of the chipped material to be placed within the floodplain. Chipped material would be placed on the easement

⁷ Solid waste, as defined in CFR 40 CFR 261.2 and in 20 NMAC 9.1, is any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

⁸ Hazardous waste, as defined in 40 CFR 261.3, which addresses RCRA regulations, and by reference in 20 NMAC 4.1, is waste that meets any of the following criteria: a) waste exhibits *any* of the four characteristics of a hazardous waste: ignitability, corrosivity, reactivity, or toxicity; b) waste is specifically *listed* as being hazardous in one of the four tables in Subpart D of the CFR; c) waste is a mixture of a *listed* hazardous waste item and a nonhazardous waste; d) waste has been *declared* to be hazardous by the generator.

just south of the floodplain and stabilized to prevent it from entering the floodplain. Excavated soil and rock material would be returned to the trench whenever practicable. Excess excavated material generated in the floodplain would be analyzed for suspected radioactive contamination. Material determined to be low-level radioactive waste would be removed and disposed of at Area G, TA-54. Material that was not radioactively contaminated could remain on site.

3.2.12.3 No Action Alternative

There would be no change in waste management associated with implementing the No Action Alternative. No waste would be generated under this alternative.

3.2.12.4 Environmental Restoration

Los Alamos Canyon has received contaminants from PRSs within the watershed (see Section 3.2.3). The area of the highest elevated constituents in the construction area is expected to be at the western end of the easement at the confluence of Los Alamos and DP Canyons. Evaluation of these sediments has found increased concentrations of ^{241}Am , ^{238}Pu , ^{90}Sr , and ^{137}Cs . However, much of this sediment was removed during revegetation activities after the Cerro Grande Fire. The levels of contamination in Los Alamos Canyon sediments do not present an unacceptable human health risk under the conditions of present-day land use, including a scenario for “construction worker” (LANL 1998) as described in Section 3.2.11.1. However, data are not sufficient to rule out the possibility of a higher potential health risk from contamination encountered in an unsampled area. Since most of the pipeline route is south of the floodplain on an elevated natural bench, radioactive contamination of the easement area is expected to be minimal (LANL 1998). Radiation surveys would be conducted by LANL workers prior to and during construction to evaluate areas of concern.

3.2.13 Transportation and Traffic

3.2.13.1 Affected Environment

Section 4.10 of the 1999 LANL SWEIS (DOE 1999a) describes transportation services at LANL. The impacts on transportation in and around LANL under the Preferred Alternative selected in the SWEIS ROD are described in detail in Section 5.3.10 of the SWEIS. Regional and site transportation routes are the primary methods used to transport LANL-affiliated employees, commercial shipments, and hazardous and radioactive material shipments. Bladed (unpaved) fire roads are located in many areas of LANL and are often used as access roads for maintaining utility services. The existing gas transmission line is buried beneath SR 502, which serves as the most direct access to Los Alamos town site from Santa Fe and the Española Valley. It is not subject to closure by the NNSA; it is under the control of the County Highway Department.

3.2.13.2 Proposed Action

Traffic along SR 502 would not be affected by the Proposed Action. The existing gas transmission line buried under SR 502 would be taken out of service and abandoned in place. A very short period (hours) of traffic control would be required for this activity but the road surface would not be disturbed and all traffic into and out of the area would be stopped for a very short period of time. Construction of the new gas transmission line in Los Alamos Canyon would not appreciably affect traffic along SR 4 because the project would only involve 20 to 30 people

working up to six months duration. Construction equipment would be confined to working in Los Alamos Canyon and not interfere with traffic on SR 4 or SR 502. The existing unpaved access road into Los Alamos Canyon may require some grading to enhance its functioning as a fire and maintenance road once the gas line project was completed.

3.2.13.3 No Action Alternative

Under this alternative, the existing gas transmission line buried under SR 502 would not be abandoned and implementing the No Action Alternative would result in the existing gas line continuing to be used. SR 502 could be damaged and possibly closed to traffic for an indeterminate length of time in the event of a gas line failure. Loss of the use of SR 502 to access the Los Alamos town site would cause all traffic coming into and out of Los Alamos and LANL to divert to SR 4, East Jemez Road, or Pajarito Road. If NNSA restricted traffic along East Jemez or Pajarito Roads then traffic would encounter a considerable diversion in miles and time traveling past White Rock and Bandelier National Monument. There would be more congestion along West Jemez Road especially through TA-3 and at the Diamond Drive and Jemez Road intersection and northbound across the Los Alamos Canyon bridge during peak commute periods. These delays would present safety problems of various magnitudes during emergencies.

4.0 ACCIDENT ANALYSIS

The Proposed Action of constructing approximately 3 mi (5 km) of new 12-in. (30-cm) natural gas transmission line from the White Rock intersection to Los Alamos Canyon consists of activities that are performed on a routine basis in utility line installation and, thus, are a common practice in this standardized public utility industry. Therefore, specialized accident types that are considered at DOE nuclear facilities are not a consideration. The most serious potential accident considered for the Proposed Action would be a fatality during installation of the transmission line. The activities are considered a form of construction and, so, potential fatalities can be considered by comparing national statistics on construction with project worker information for the Proposed Action. No fatalities are likely to result from the proposed construction.

The estimated number of workers was compared to recent risk rates of occupational fatalities for construction. Up to 30 full-time workers could be employed, working up to 12 hours per day and up to 7 days per week for about a 6-month duration. This equates to about 110 percent of a normal work year. The average fatality rate in the U.S. for industries that include causes of falls, exposure to harmful substances, fires and explosions, and being struck by objects, equipment, or projectiles is 1.9 per 100,000 workers per year (Saltzman 2001). No deaths (0.00062) from these causes are expected from implementing the Proposed Action.

Transportation activities are expected to include the transport of materials (such as pipes and welding materials) to the site and waste and debris away from the site. Of the different types of transportation occupations nationwide, truck drivers of all types of trucks experience the highest fatality rate (26 deaths per 100,000 full-time workers per year) (Saltzman 2001). The transportation activities for the Proposed Action are expected to constitute a minor fraction of the amount of travel on which transportation fatality rates for industry are based. No statistics were found for trucks hauling materials on special roads such as the pipeline access road; however, the